

# Chapter 14

## Learning Patterns as Criterion for Forming Work Groups in 3D Simulation Learning Environments

**Jose Maria Cela-Ranilla**

*Rovira i Virgili University, Spain*

**Luis Marqués Molías**

*Rovira i Virgili University, Spain*

**Mercè Gisbert Cervera**

*Rovira i Virgili University, Spain*

### ABSTRACT

*This study analyzes the relationship between the use of learning patterns as a grouping criterion to develop learning activities in the 3D simulation environment at University. Participants included 72 Spanish students from the Education and Marketing disciplines. Descriptive statistics and non-parametric tests were conducted. The process was analyzed by means of teamwork measurements and the product was analyzed by assessing the final group performance. Results showed that learning patterns can be an effective criterion for forming work groups, especially when the students do not know each other.*

### INTRODUCTION

The current university curricula are being defined in terms of competences or skills that go further than specific contents. The academic profiles need to observe both, the academic setting and the later professional performance. In this sense, generic skills that can be transferred to diverse contexts of application are becoming the key of employability. These generic skills also enhance continuous learning throughout one's life and therefore being ready to perform in varied/various working activities.

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According to the Tunning project (<http://www.unideusto.org/tuningeu/>), teamwork is one of the most valued skills and, therefore, its development must be explicitly expressed in HE curricula. Organizations tend to develop projects in which different persons from diverse areas must work jointly. In agreement with some authors (Ros, 2006; Hellriegel et al., 2006), teamwork has to do with personal and social interaction, shared responsibility, openness of the spirit, active listening, sense of belonging and commitment to achieve a common objective.

Considering that teamwork is a key skill to be acquired, it is necessary to propose learning activities that involve teamwork and these must be assessed. These activities must promote the action of the student as an individual, and also as part of a team with a common objective. According to a socio-constructivist conception, Zabalza (2003) states that teamwork, as a skill related to personal relations, is one of the four basic dimensions to be considered in educational settings.

In parallel, the development of Information and Communications Technology (ICT) is currently offering many and varied opportunities for developing instructional activities that contain both components of teamwork and action. In this sense, 3D learning environment of simulation can constitute an extraordinary didactic scenario in which the students can act in a collaborative way (Gisbert et al., 2010).

The present work refers to these two components: teamwork and technological simulations. The effectiveness of teamwork as a learning strategy depends on multiple aspects, but this work's aim is to analyze group formation as a variable of the effectiveness of teamwork in a technological environment of simulation.

In group learning activities affinity was found as a very common criterion to form groups; that is to say, learners build the groups by themselves. The specific question is whether the variable "learning pattern" is a useful grouping criterion for forming work groups in a 3D technological environment of simulation. Learning patterns refer to the specific way in which people learn; in Johnston's terms (1995), people have their own personal way of learning and this is defined by the combination of four learning patterns: sequential, precise, technical reasoning and confluent.

The research was conducted by comparing groups formed using the mentioned criteria. On one hand, the learning process was assessed by measuring two dimensions of teamwork competence: identity and communication and, on the other hand, the learning product was assessed by measuring the final project developed by each group.

In other words, the present research could be organized around two main research questions:

- Q.1 Are there differences between groups formed by learning patterns (G-LP) and groups formed by affinity (G-Af) when analyzing their teamwork development during the learning experience?
- Q.2 Are there differences between G-LP and G-Af based on students' performance at the end of the process?

An additional aim of this work was to test the use of an analytical model, based on the authentic evaluation, to assess the students who participate in an activity of simulation within a 3D learning environment.

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